NON-PUBLIC?: N
ACCESSION #: 8806030016
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Haddam Neck PAGE: 1 of 3

DOCKET NUMBER: 05000213

TITLE: Reactor Trip Due to Improper Installation of Turbine Stop Valve Cam Switches
EVENT DATE: 04/30/88 LER #: 88-012-00 REPORT DATE: 05/27/88

OPERATING MODE: 1 POWER LEVEL: 060

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: B. J. Flynn, Associate Engineer TELEPHONE #: 203-267-2556

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT: At approximately 1130 on April 30, 1988, with the plant at 60% power, an automatic reactor trip occurred while returning an idled reactor coolant system loop to service. The most probable cause of the trip was determined to be a false trip signal indicating that both turbine stop valves had closed. The cause of the signal was due to improper installation of the turbine stop valve cam switches. The operators performed the immediate actions as specified by the emergency operating procedures and the plant responded as expected. The switches were repaired and tested. A maintenance procedure will be developed to ensure proper installation and testing of the turbine stop valve cam switches.

This event is reportable under 10CFR50.73(a)(2)(iv) since it involved automatic actuation of the reactor protection system.

(End of Abstract)

BACKGROUND

At about 2230 on April 23, 1988, operators began shutting down the plant for replacement of the #3 reactor coolant pump seal (EIIS Code: SEAL). It was planned to stop at 60% power for approximately four hours of data collection

for the newly installed Internals Vibration Monitoring (IVM) system (EIIS Code: IV), transfer to three loop operation for another four hours of data collection, return to normal four loop operation, and shutdown. By procedure, four loop operation is restored at a maximum power level of 60% to allow a buffer to the three loop overpower trip (74% power on two of four Nuclear Instrumentation power range channels), and the arming of the reactor coolant low flow permissive, P-8 (74% power on turbine first stage pressure) which causes the reactor to trip on low flow in one reactor coolant loop instead of two reactor coolant loops.

EVENT DESCRIPTION

At approximately 1130, operators essentially completed restoring the idled reactor coolant loop when a reactor and turbine trip occurred. The operators performed the immediate actions as specified by the emergency operating procedures and the plant responded as expected. The primary side first out annunciator displayed "TURBINE TRIP" indicating that the cause of the reactor trip was a turbine trip. This annunciator is activated by either two of three auto stop oil relays (control oil pressure < 45 psig), or a signal that both turbine stop valves have closed. Review of the plant computer Sequence of Events (SOE) report indicates that the auto stop oil relays were picked up after the reactor scram breakers opened. The SOE report also indicates that the right turbine stop valve closed after the reactor trip, and showed no indication that the left turbine stop valve closed. The plant computer and reactor protection system receive turbine stop valve position indication (open or closed) from cam operated switches on each stop valve. Troubleshooting of these switches indicated the following:

1. The linkage from the left stop valve to the cam shaft was improperly connected causing the shaft to rotate in the wrong direction. This resulted in the plant computer never seeing the valve go closed. It also results in a CLOSED signal to the reactor protection system when the valve moves just slightly closed instead of full closed as designed.

2. One cam on the right turbine stop valve's cam switch was mispositioned resulting in a CLOSED signal to the reactor protection system position, regardless of actual valve position.

The SOE report indicates no trip condition at the time of the trip. However, because of the mispositioned turbine stop valve cam switches, the plant computer would not see this trip condition, nor would either valve have to close to cause the trip.

CAUSE OF THE EVENT

The most probable cause of the trip is that vibration caused a slight perturbation in position of the left turbine stop valve which gave a "closed" signal coincident with the false "closed" signal from the right turbine stop valve, causing the reactor trip. Although the arming of P-8 coincident with a low flow condition in Loop 4 was originally determined to be the most probable cause of the trip, this is now considered to be less likely since it does not explain why the plant computer did not indicate these conditions, why operators did not observe these conditions, nor why the "TURBINE TRIP" first-out annunciator was received. The mispositioned turbine stop valve cam switches explain the SOE report, the observations of the operators, and the indication on the first-out panel.

The root cause of this event has been determined to be improper installation of the turbine stop valve cam switches.

SAFETY ASSESSMENT

This event is reportable per 10CFR50.73(a)(2)(iv) since it involved the automatic actuation of the reactor protection system. It is bounded by the loss of load accident. The consequences were much less significant than those predicted by the loss of load analysis because the reactor tripped concurrent with the turbine trip. All safety and control grade systems responded properly. Although the initiation of reactor protection is not desirable, there are no safety concerns associated with this event.

CORRECTIVE ACTION

The turbine stop valve cam switches were repaired, and functional testing was performed to verify all functions of the switches. A maintenance procedure will be developed by October 1, 1988 to ensure proper installation and testing of the stop valve cam switches.

ADDITIONAL INFORMATION

None.

PREVIOUS SIMILAR EVENTS

None.

CONNECTICUT YANKEE ATOMIC POWER COMPANY
HADDAM NECK PLANT
RR#1 - BOX 127E - EAST HAMPTON, CT 06424-9341

May 27, 1988
Re: 10CFR50.73(a)(2)(iv)

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

Reference: Facility Operating License No. DPR-61
Docket No. 50-213
Reportable Occurrence LER 50-213/88-012-00

Gentlemen:

This letter forwards the Licensee Event Report 88-012-00, required to be submitted, pursuant to the requirements of Connecticut Yankee Technical Specifications.

Very truly yours,

/s/ ILLEGIBLE
Donald B. Miller, Jr.
Station Superintendent
DBM:REB/dlf
Attachment: LER 88-012-00
cc: Mr. William T. Russell
Regional Administrator, Region I
475 Allendale Road
King of Prussia, PA 19406

J. T. Shedlosky
Sr. Resident Inspector
Haddam Neck

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